Are the Chondrites Petrified Organic Debris?

Exactly one hundred and forty years ago the science of meteoritics, zoology, and paleontology bifurcated. A tiny handful of scientists, extensively investigating the chondrites, declared that these most frequently recovered rocks from space were in fact petrified organic debris – material with its closest terrestrial analogue being fossiliferous and coalified material commonly found on Earth in bedrock layers containing, and in many cases being entirely composed of, the debris of previously living creatures.

Dr. Carl von Gümbel in 1875 and 1878 concluded that the chondrites showed no signs of igneous vitrification but instead were a kind of clastic rock; he proposed that they were created through some kind of agglomeration process in a vapor, similar to hailstones:

> "There is nothing to be found in the rock of glass or lava-like additions (with the exception of the fusion crust). It is not a crystalline rock that solidified from a melt flow, but rather a clastic rock, the aggregate particles of which do not have the properties of volcanic ash."[1] And "...there is no trace of lava- or slag-like admixtures nor binding agents; all slagging that is found is only secondary phenomena resulting from the movement of the meteorite within the terrestrial atmosphere..."[2]

In 1880 Dr. Otto Hahn published *The Meteorite (Chondrite) and its Organisms*, which built on Gümbel's clastic observations by concluding that much of the chondritic material appeared to have an organic origin and that the globules of the chondrites were being mistaken for igneous glass, when they were in fact the petrification products of diverse anatomical debris.[3] Part of Hahn's goal was to sort the organic debris from the inorganic. Hahn stated that if and only if all five of the following conditions were fulfilled could he declare an observed form as being organic:

1. a closed form,
2. a recurring form,
3. recurring in developmental stages,
4. structure, either cells or vessels,

[1] *Über die Beschaffenheit des Steinmeteoriten vom Fall am 12. Februar 1875 in der Grafschaft Iowa Nordamerika*, Gümbel, 1875.

[2] *Über die in Bayern gefundenen Steinmeteoriten*, Gümbel, 1878.

[3] *Die Meteorite (Chondrite) und ihre Organismen*, Hahn, 1880.

5. similarity to known forms.

After his inspection, however, Hahn found that there were only a small number of inorganic fragments; and instead, that the great bulk of the material was organic.

Hahn's primary argument was a negative one – by flipping the logic and supposing that the features of the mineral crystallites were inorganic – with his task being to prove them as such; Hahn realized that one must conclude that this is impossible based on all known processes of mineral crystallization and so, to maintain the methodological and process principals of petrology and the scientific method, the minerals of the chondrite could only have an organic origin.[4] For instance, one could not invent a new form of rock-matter supposedly unique to a location impossible to sample (planetary nebulae). After proving this line of reasoning he then went on to show how the forms in the meteorite satisfied the five previously mentioned conditions.

After studying hundreds of chondrite thin sections, Hahn concluded that no terrestrial inorganic crystallites could possibly replicate the crystallites observed in the chondrites: they form a finite characteristic set of features with some, but by no means all, of the inclusions being marked by distinct shapes and patterns, such as spheroids and elongated ovals with additional infilling material creating patterns like grates, fans, chambers, some with defined microscopic spicules, with other pieces having all manner of amoeboid-like multifaceted forms, some feathery and skeletal in appearance.

The zoologist Dr. David F. Weinland confirmed the organic nature but rejected the zoological classifications of Hahn in favor of his own set, based on his more experienced observations.[5] Hahn had placed the organisms into three major existing categories: the corals, the sponges, and the crinoids. However, Weinland explained that most of the crinoids were in fact polycystines, and that there might be two or three species of crinoids – in addition to the corals and sponges.[6] The result of Weinland's initial work was a paper publishing sixteen novel genera, each with multiple species, and concluding that the total number of species could be close to fifty.[7]

Weinland concluded that the chondrites must be a kind of primary petrified material, with some chondrite specimens being more fossiliferous than others. It was his practice to search for a pristine specimen within a larger

[4]Hahn, 1880.
[5]*Das Ausland*, Article 1, Vol. 16, 1881.
[6]*Das Ausland*, Article 1, Vol. 26, 1881.
[7]*Über die in Meteoriten entdeckten Tierreste*, Weinland, 1882.

meteorite mass (most chondrite specimens are quite small). By obtaining and then studying these pristine specimens, he was able to better classify the odds and ends found in much greater number.[8]

Being acquainted with Dr. Hermann Karsten, a biologist, Dr. Weinland convinced him that there were indeed miniature petrified corals within the chondrites. Karsten then wrote *The Meteorite and its Organisms*, in which he stated that such corals were indeed to be found within the chondrites: "...the discovery of organisms in the chondrites, up till now thought to be glass (!!) or a crystallization process, is correct and remains undoubtedly true for any who, with the requisite knowledge, engage in the investigation of these aerolites." He continues:

> "The forms of the creatures so far recognized in the chondrites are all associated with water; the whole mass of these meteorites seems to have been built underwater, the countless microscopic organisms either petrified retroactively or, more likely based on the chemical analysis of these bodies, combined in their own way with the mineral substances dissolved in this water and assimilated the same, similar to how present-day mussels, corals, *Bacillaria*, *Equiseten*, and various Vibrionaceae skins silicify and calcify in a similar manner to the bones of vertebrates. Ultimately, they were cemented together by the dried-up reside of the silica rich nutrient liquid into a coherent silica rock mass. One also sees, therefore, countless small translucent and transparent organizations — at least in the Knyahinya meteorite — heaped one upon another, and this makes it very difficult to recognize the actual form of most of them, since their presence, even to those who are familiar with microscopic organic forms, is difficult to perceive, especially being unfamiliar forms."[9]

Anton Rhezak, open to the idea that meteorites could contain organic material, but skeptical of Hahn's claims, stated that there are no known terrestrial enstatite rocks that exhibit the forms seen in the chondrites, in addition to the fact that there are non-chondritic types of meteorites composed of enstatite which do match quite well with terrestrial enstatite specimens.[10] Yet, Rhezak provided no alternative other than that resorted to by researchers of his day: the theory of patterns of encrusted material in glass. He stated

[8] Weinland, 1882.

[9] *Die Meteorite und ihre Organismen*, Karsten, 1881.

[10] *Das Ausland*, Article 5, Vol. 20, 1881.

that a single organic specimen found in the chondrites would be a counterexample to the entire theory of glass as the explanation for the forms of the chondrites. He based his entire opposition to Hahn and Weinland on a single meteorite with only a few cuts and fragments.[11]

Dr. Carl Vogt, in 1882, wrote a lengthy essay: *The Alleged Organisms of the Meteorites*, which included hand drawn illustrations, in an attempt to disprove Hahn's theory by proving that the forms of chondrites could easily be reproduced synthetically. He took the side of the opponents who claimed that the chondrules were inorganic glass crystallizations with a kind of encrusting material – readily produced by artificial means through the melting of the chondritic material. Vogt provided several illustrations showing such artificially produced chondritic material and patterns.[12] But if Vogt and his colleagues had artificially created the chondrites, then how could they have remained a mystery until the modern time? Studying Vogt's work and illustrations reveals that he either did not address or was not aware of the more interesting and peculiar features of the chondrites.

No further work was published to support Hahn, Weinland, and Karsten after 1881 and they were apparently forgotten by history. In the intervening years there has been little to no mention of their organic theory. In 1916 Dr. Randolph Kirkpatrick stated in his *Nummulosphere* that the chondrites were fossiliferous – although he rejected Hahn because Hahn had not gone far enough in his conclusions.[13] Dr. George P. Merrill stated in 1920 that some of the chondrites resembled the products of slag but he also pointed out problems with this comparison.[14] In 1961 Drs. Claus and Nagy published a paper detailing at least five types of "organized elements" within various carbonaceous chondrites.[15]

In the 1950's Sir Fred Hoyle proposed that interstellar dust clouds could be composed of freeze dried bacteria based on light spectrum observations.[16] Dr. Chandra Wickramasinghe continued and expanded the work of Hoyle and wrote numerous books in support of the theory of panspermia.[17] In recent times, Dr. Richard B. Hoover has found microscopic evidence of organic structures, including cyanobacteria and diatoms, in carbonaceous chondrites.[18]

[11] *Das Ausland*, Article 4, Vol. 37, 1881.

[12] *Les Prétendus Organismes des Météorites*, Vogt, 1882.

[13] *Nummulosphere*, Kirkpatrick, 1916.

[14] *On Chondrules and Chondritic Structure in Meteorites*, Merrill, 1920.

[15] Claus, G., and Nagy, B., *Nature*, 192, 594 (1961).

[16] *Evolution from Space: A Theory of Cosmic Creationism*, Hoyle, 1984.

[17] *The Search for our Cosmic Ancestry*, Wickramasinghe, 2015.

[18] "Microfossils of Cyanobacteria in the Orgueil Carbonaceous Meteorite," Hoover, 2011.

Meteorites containing organic structures could be:

1. Living material directly ejected from a parent body – freeze dried and vacuum preserved.

2. From fossiliferous, or fossil containing, layers laid down during previous geological eons which took place on Earth or potentially another planet harbouring life (perhaps even a moon or dwarf planet) and later ejected through physical collisions.

The creation of gigapixel digital mosaics of entire meteorite thin sections provides an accurate and precise analysis of the morphological features of the chondrites, accessible via the internet on any computer workstation. The creation of such large and sharp images requires a technique that uses focus-stacking of single areas of the thin section, which are then manually stitched together into a large mosaic. These images are not contained in this document. However, they can be found online at the Solar Anamnesis website.[19]

In the following table of focus-stacked images of various chondrites are inclusions that appear to be organic. Many microscopic, micrometer sized objects are embedded within the olivine inclusions and can only be resolved at high magnification where photography is difficult without an expensive setup.

Based on all the evidence presented above and that displayed below, it seems appropriate to ask the question: Are the chondrites indeed petrified organic debris?

[19]Solar Anamnesis, `https://solaranamnesis.com`.

Figure 1: Observations of spicules, feather type patterns within a secondary material inside a single ellipsoid inclusion of perfectly clear olivine with additional bubble trails in curious locations. Northwest Africa 2892.

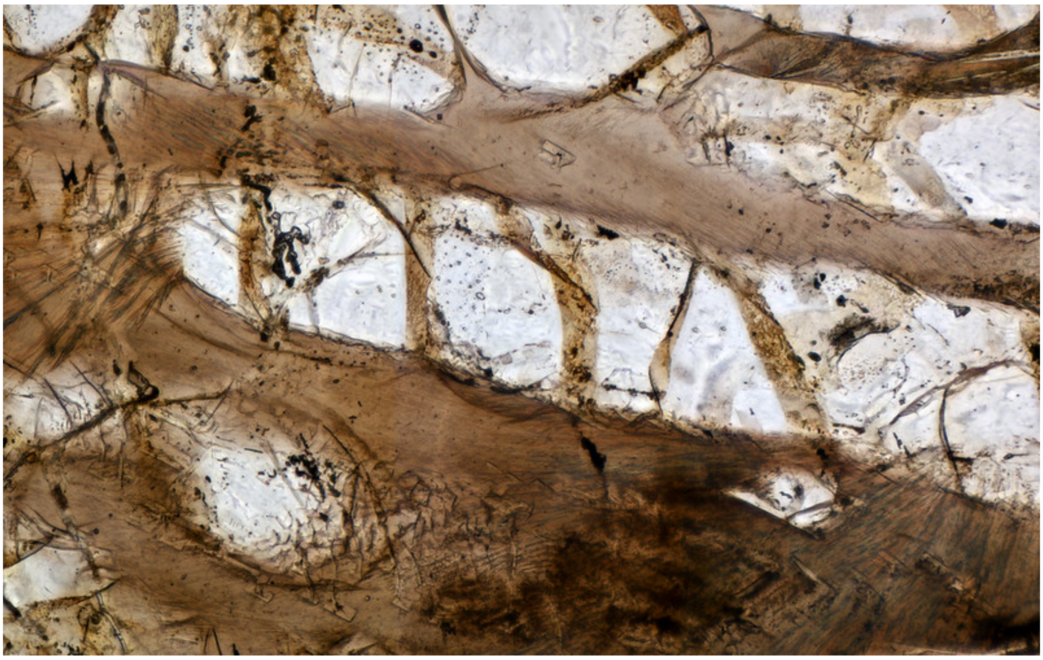

Figure 2: Higher magnification view of Figure 1.

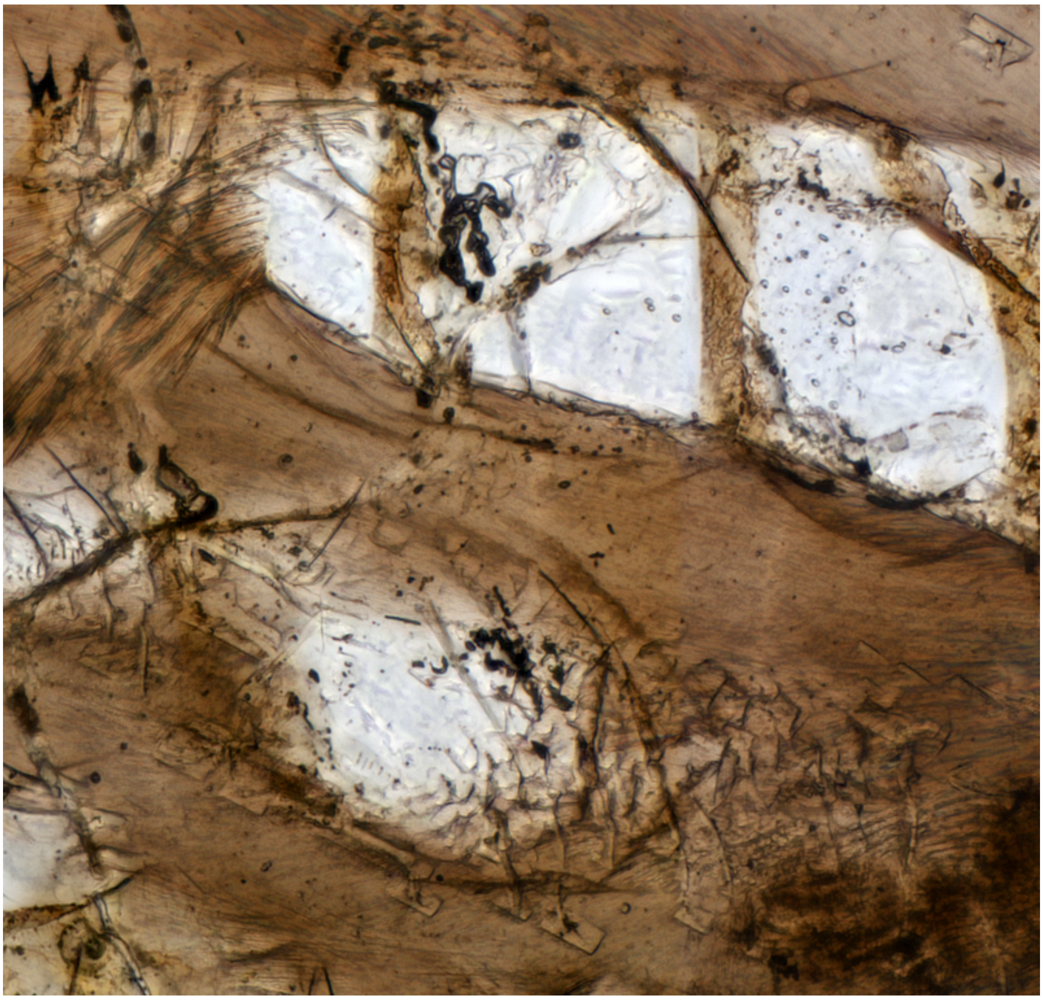

Figure 3: Cropped section from Figure 2.

Figure 4: Sharp, barbed spicules similar to some radiolarians, a unique grated oval structure attached to an appendage. Northwest Africa 11344.

Figure 5: Higher magnification view of Figure 4 showing spicules.

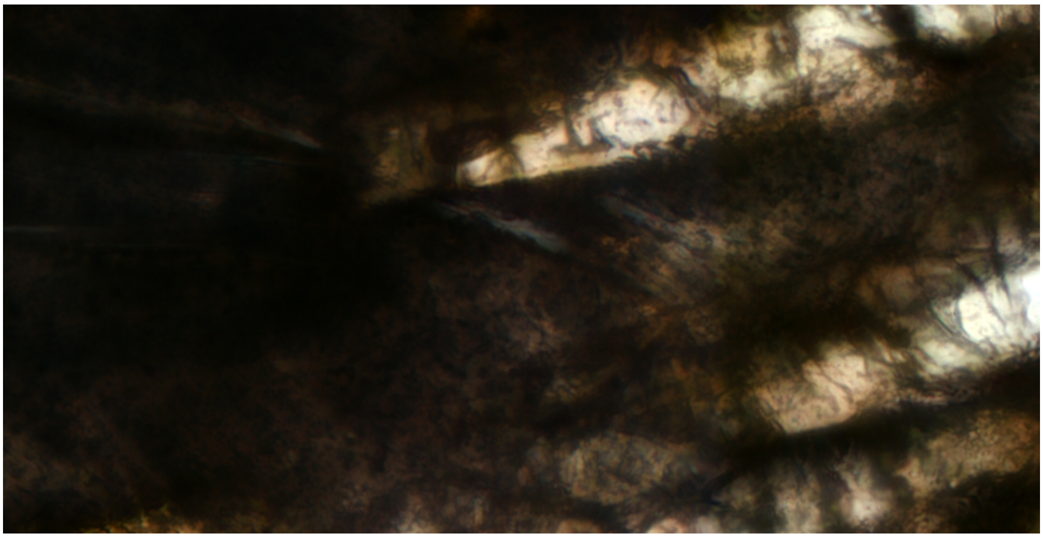

Figure 6: Cropped image of Figure 5.

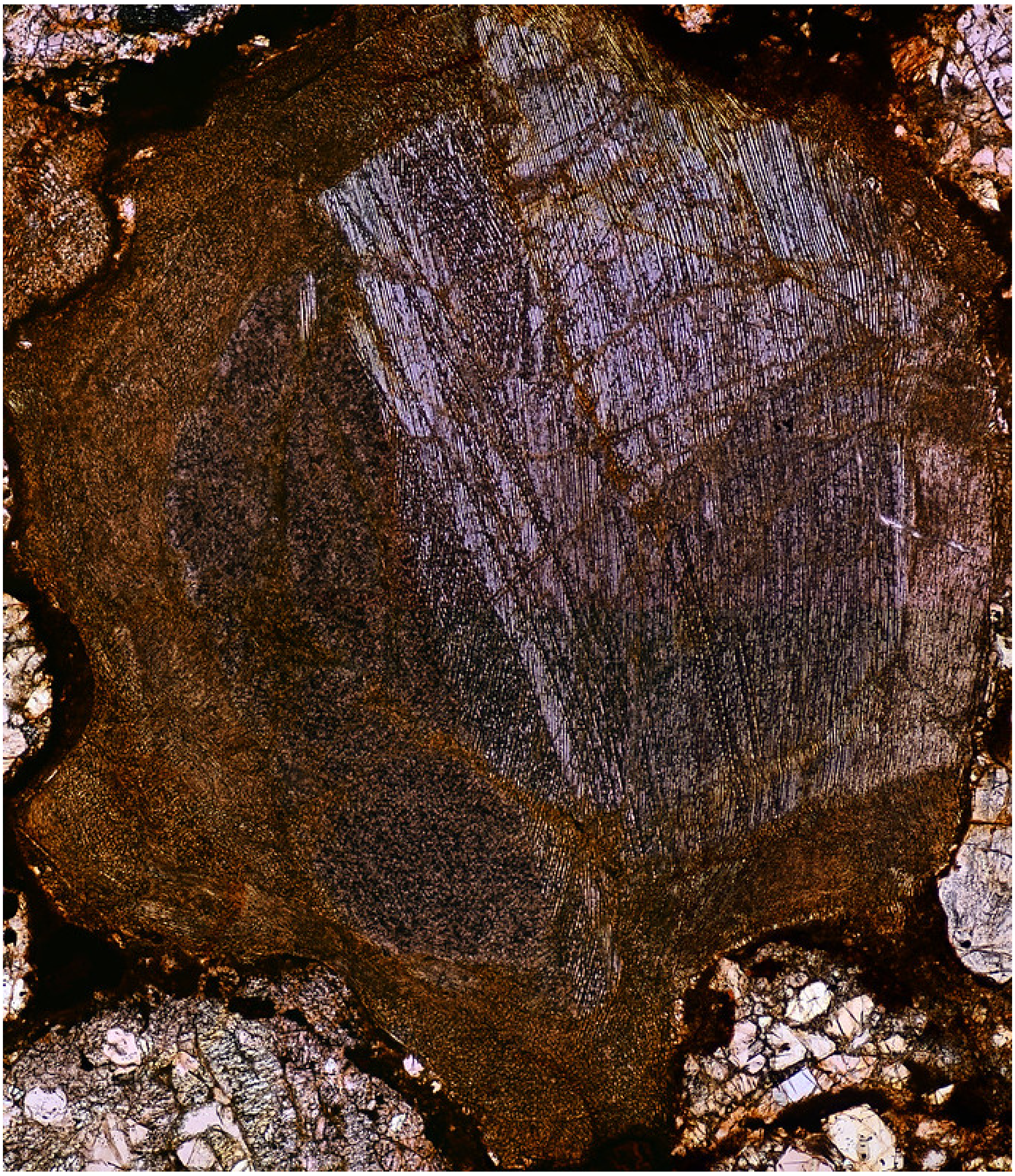

Figure 7: Resembles Figure 1 in Table 8 of Hahn's work and Figure 1 of Karsten's work. Northwest Africa 2892.

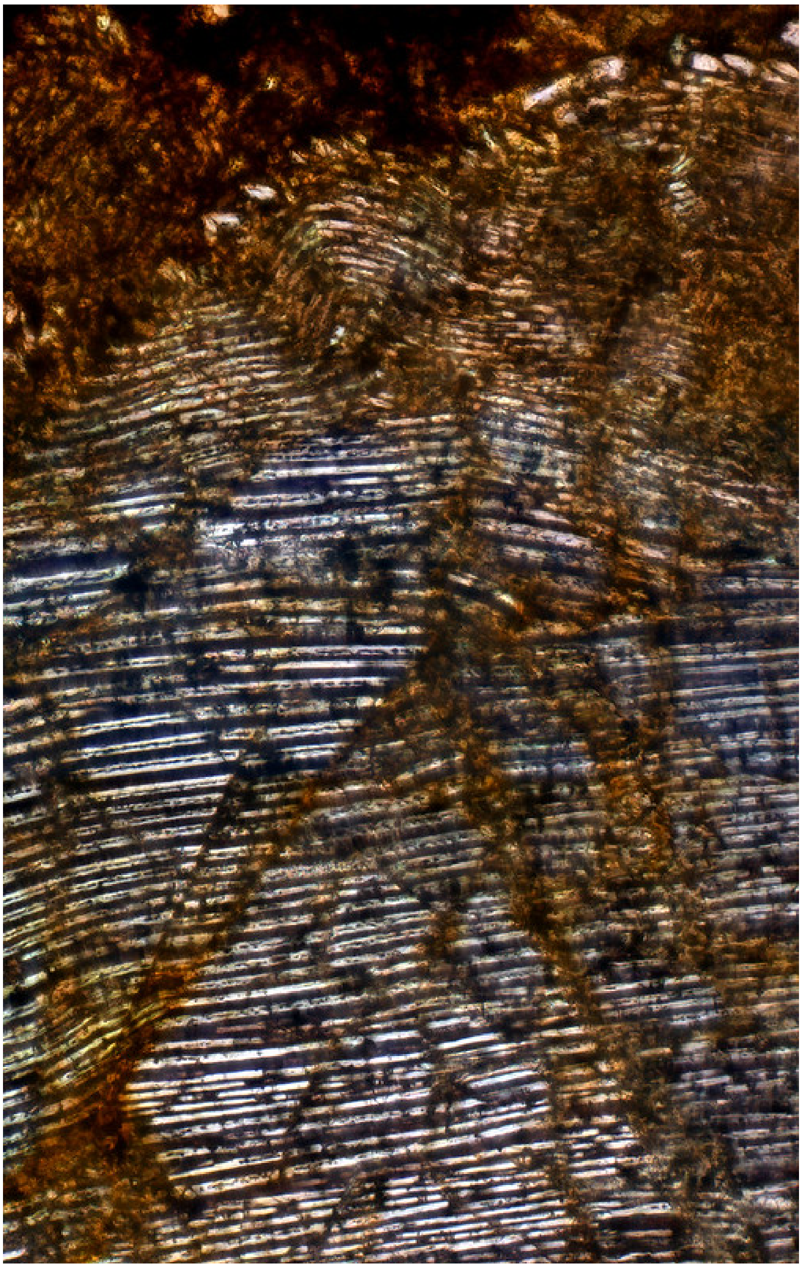

Figure 8: Numerous parallel and crossing tubular structures from Figure 7.

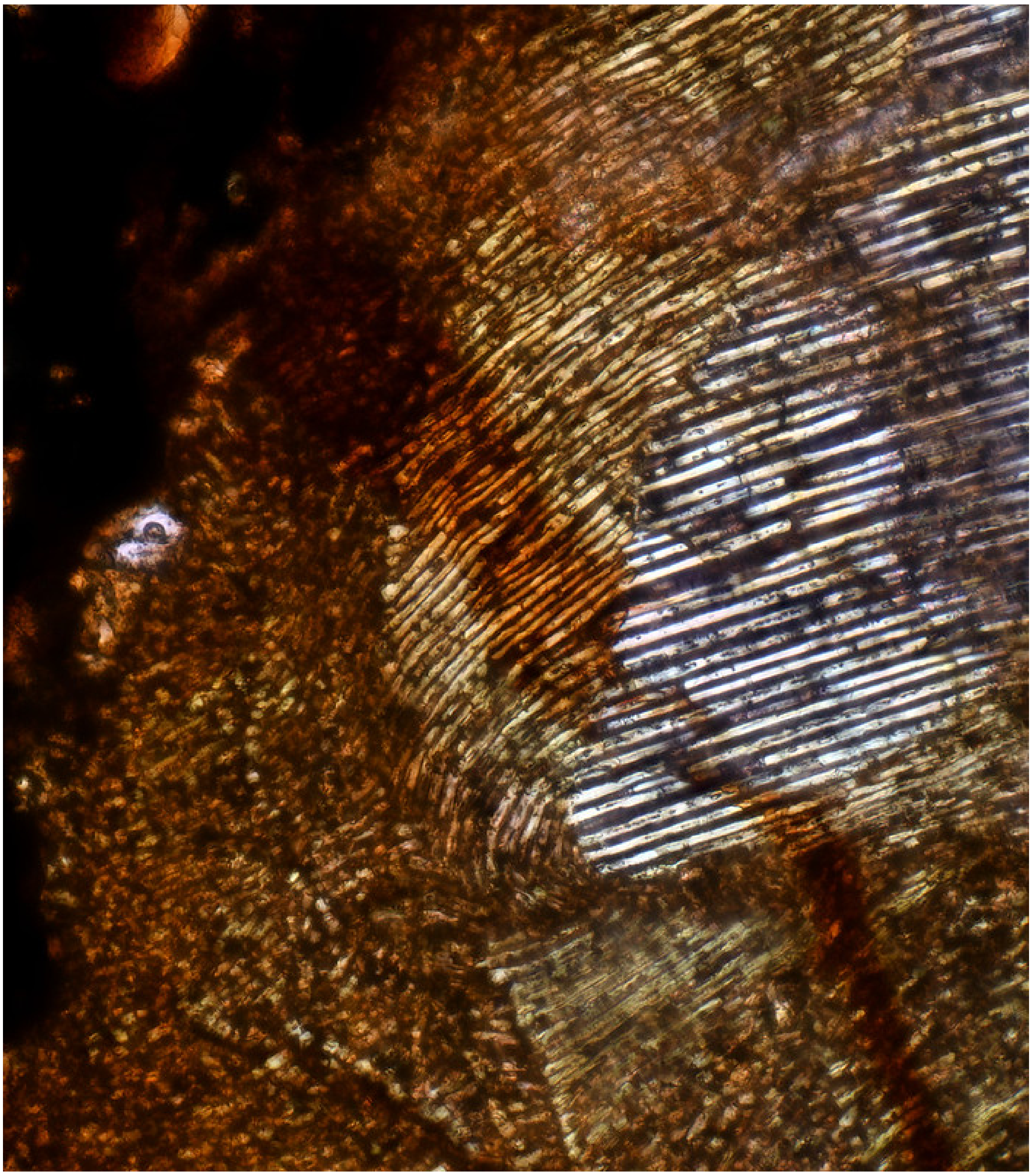

Figure 9: Numerous parallel and curved tubular structures from Figure 7.

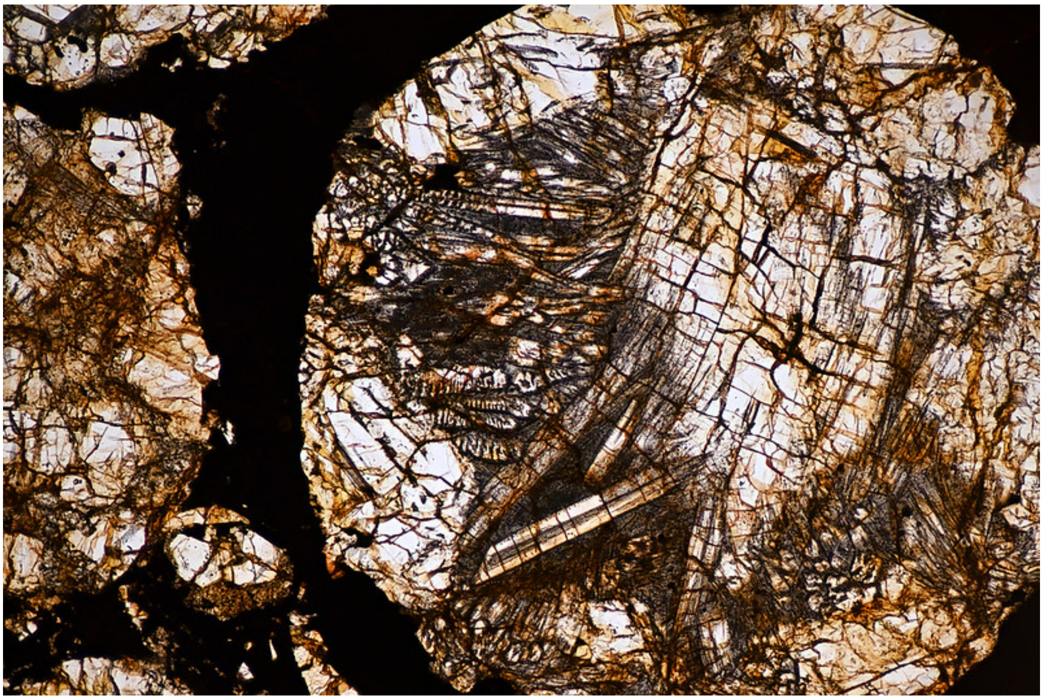

Figure 10: Interesting patterns. Northwest Africa 4910.

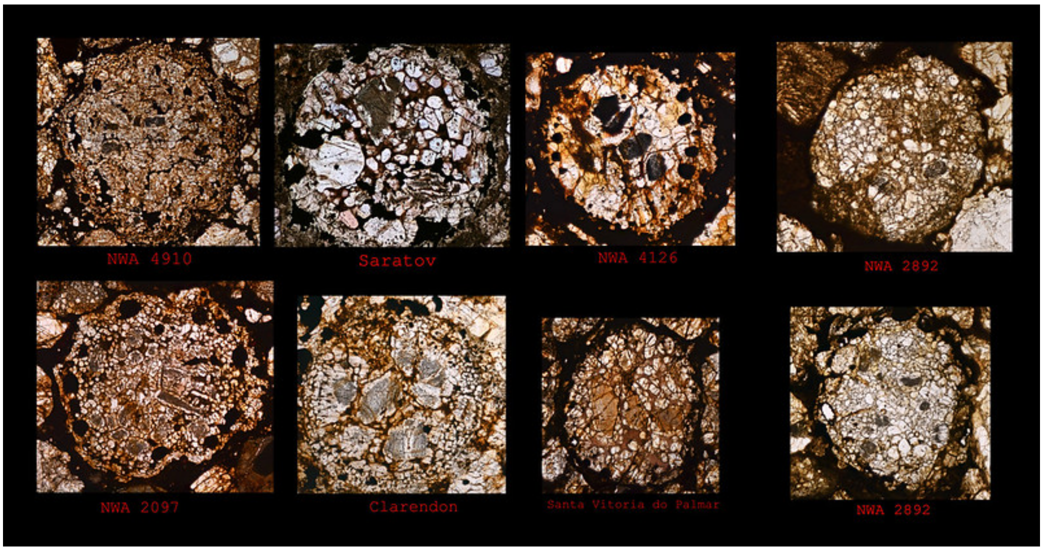

Figure 11: Greyish secondary material in peculiar patterns within the chondrule.

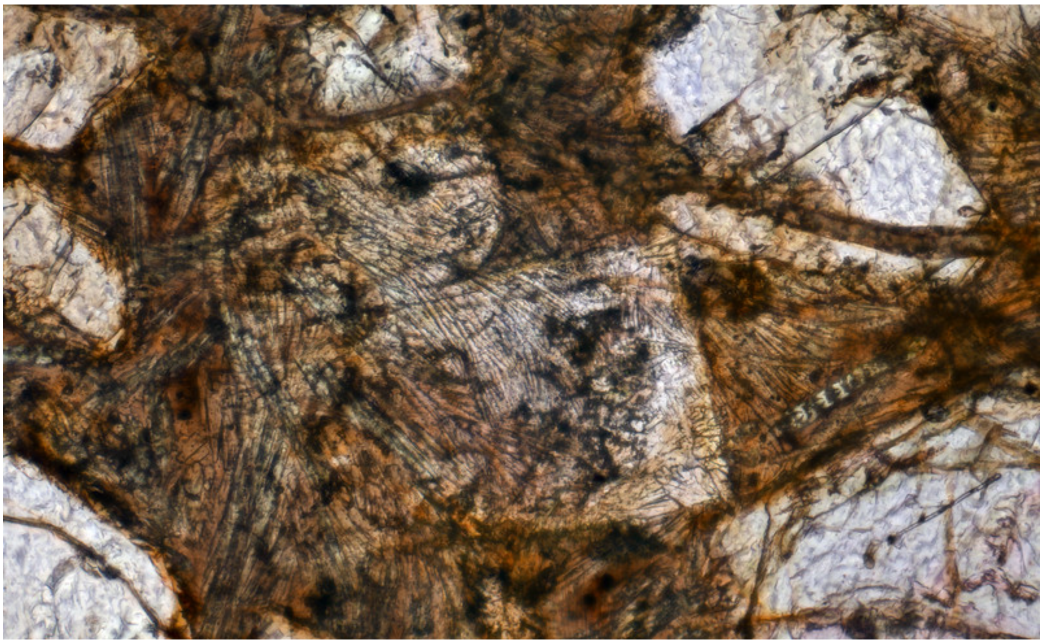

Figure 12: Feathery, skeletal looking forms. Northwest Africa 8773.

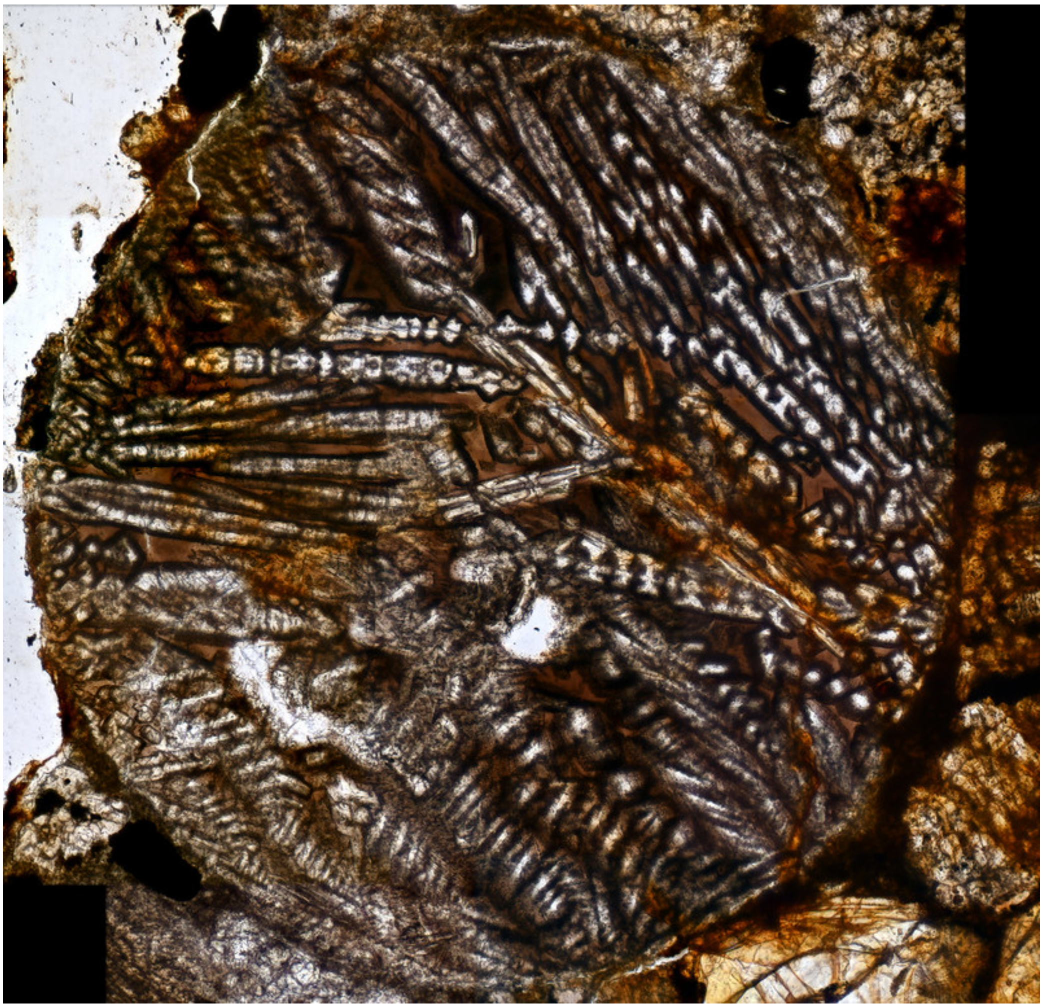

Figure 13: Skeletal looking forms. Saratov.

Figure 14: Interesting patterns with spicules at high magnification. Saratov.

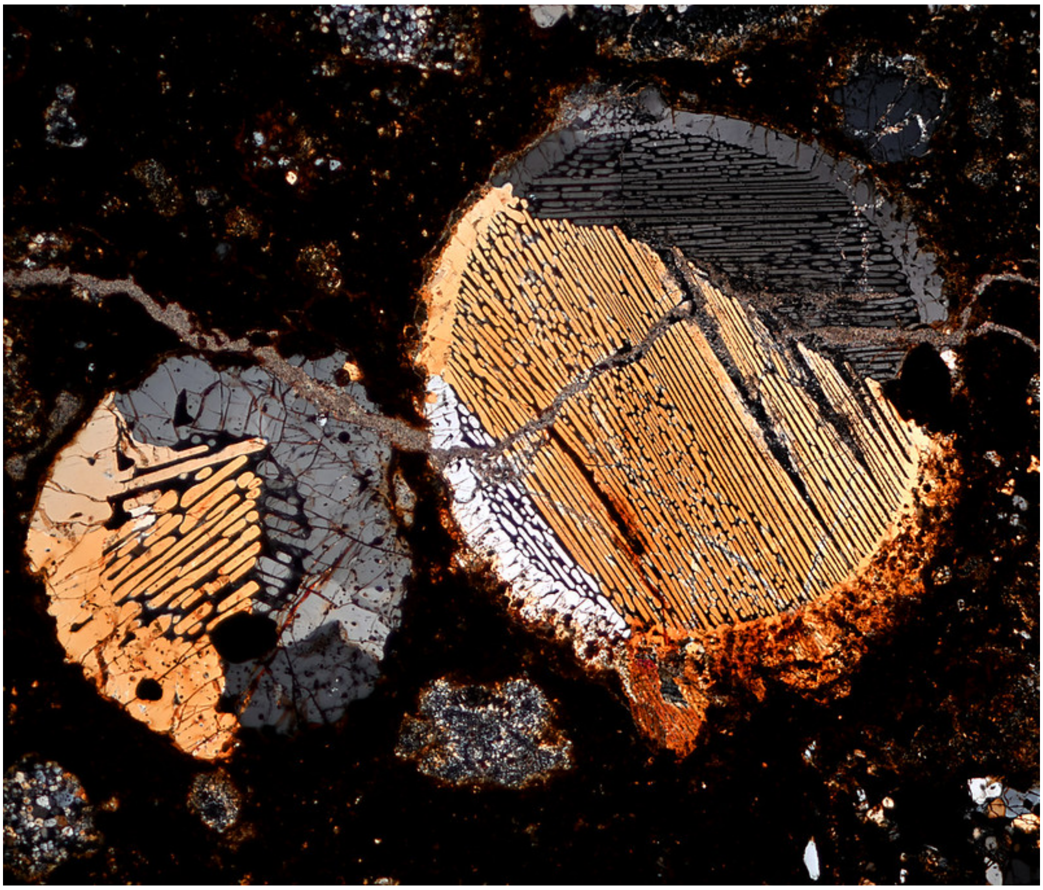

Figure 15: Two fascinating forms in cross polarized light. Northwest Africa 5930.

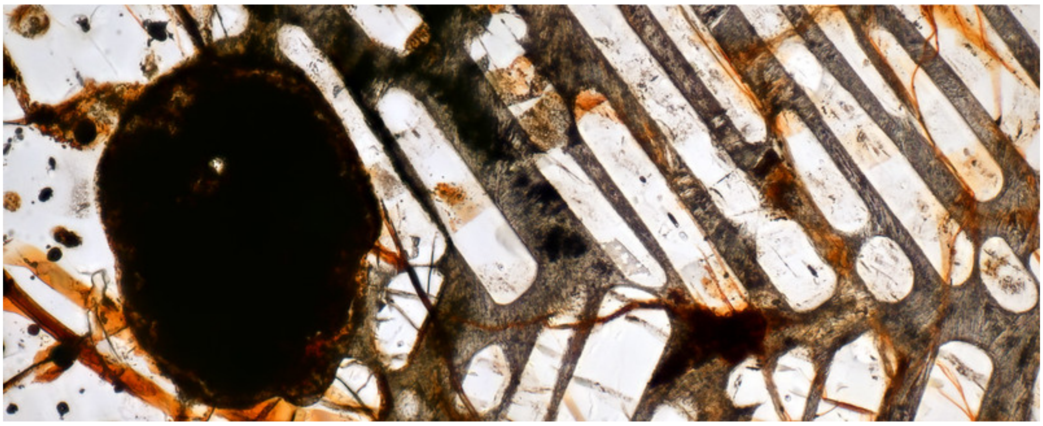

Figure 16: Higher magnification view of leftmost structure in Figure 15.

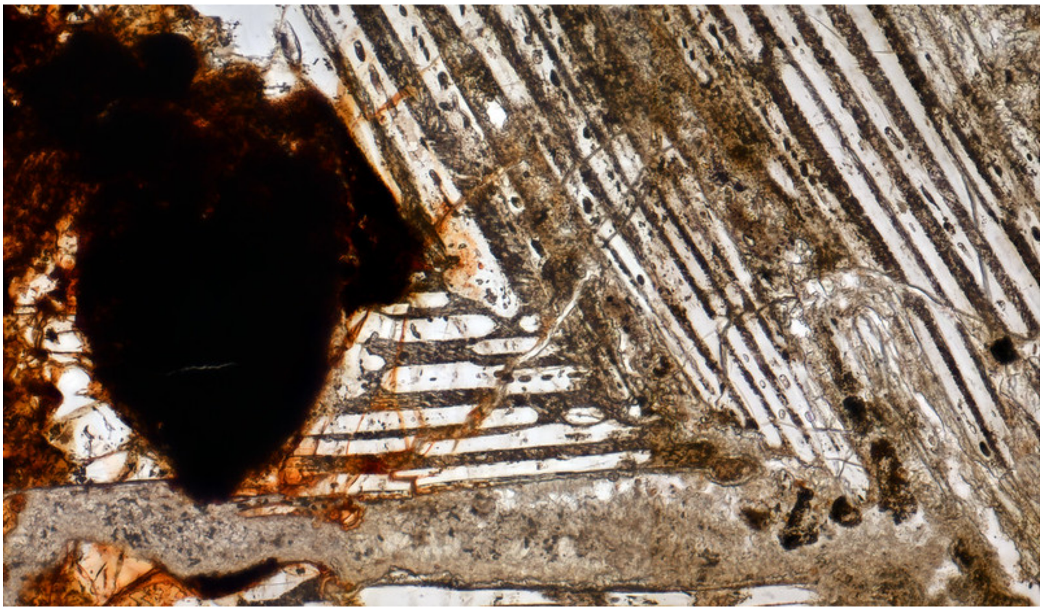

Figure 17: Higher magnification view of rightmost structure in Figure 15.

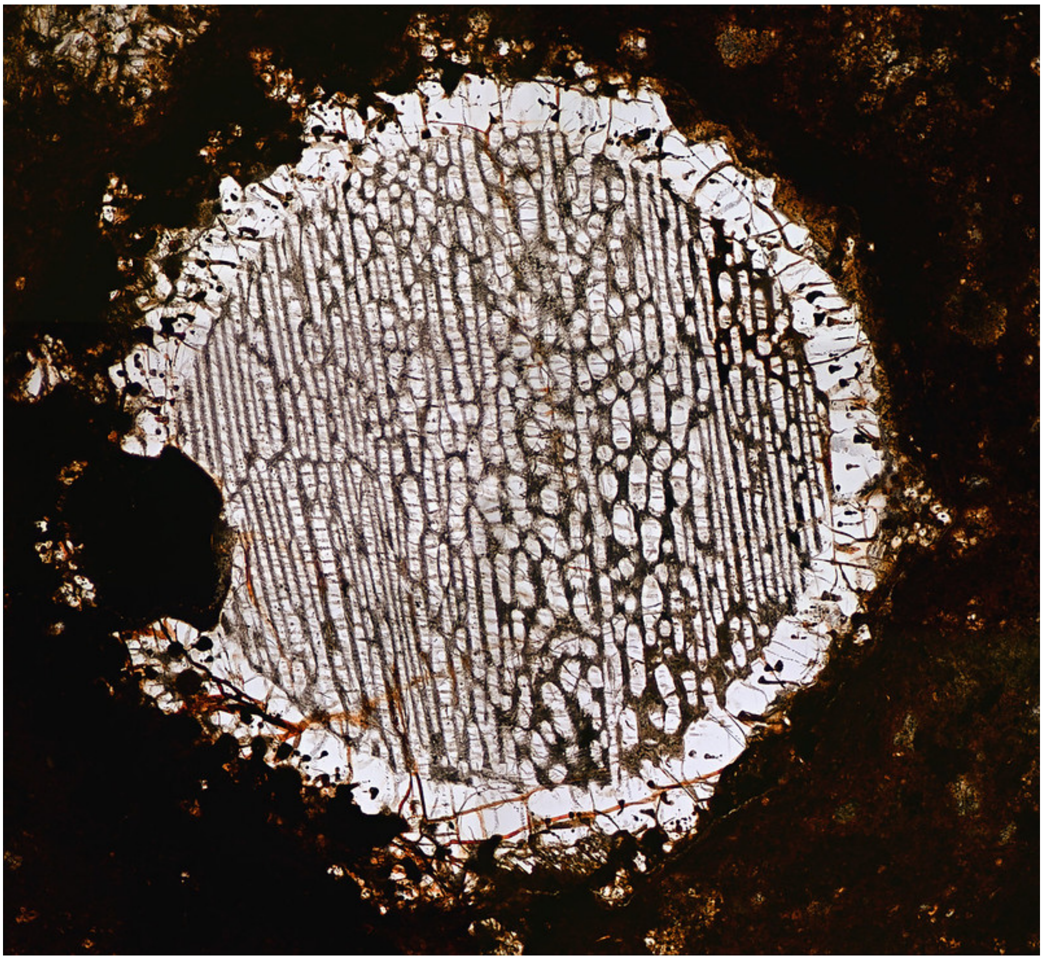

Figure 18: Interesting structure similar to those in Figure 15. Northwest Africa 5930.

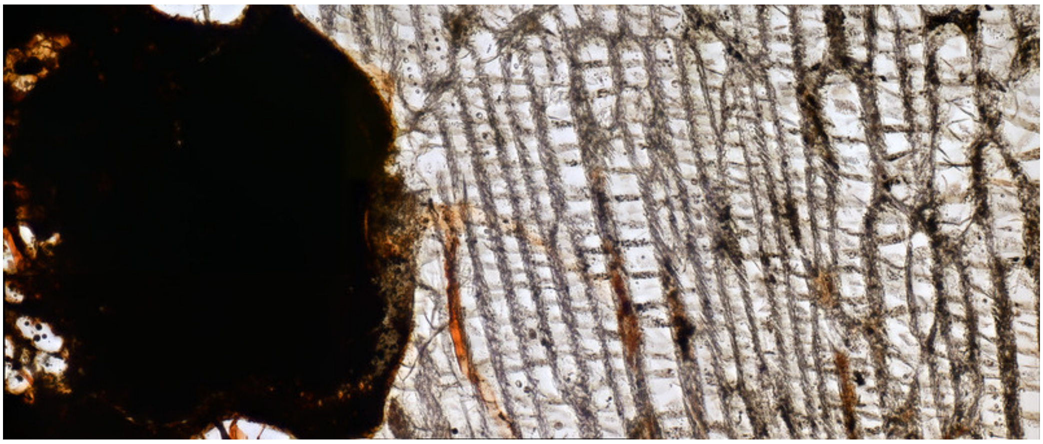

Figure 19: Higher magnification view of rightmost structure in Figure 18.

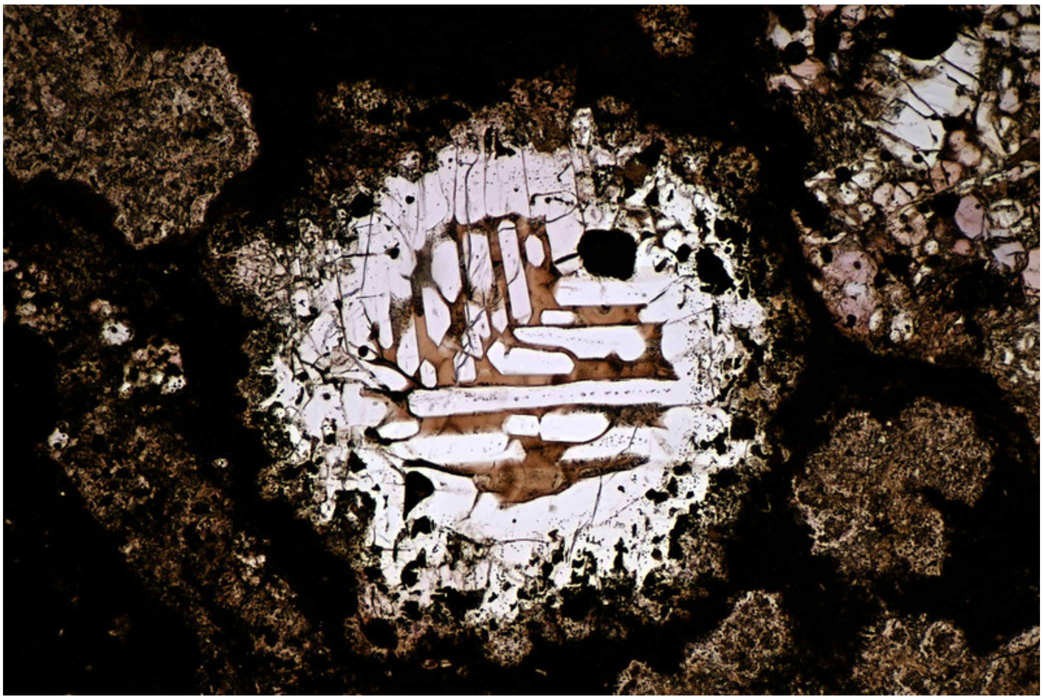

Figure 20: Curious structure in Allende.

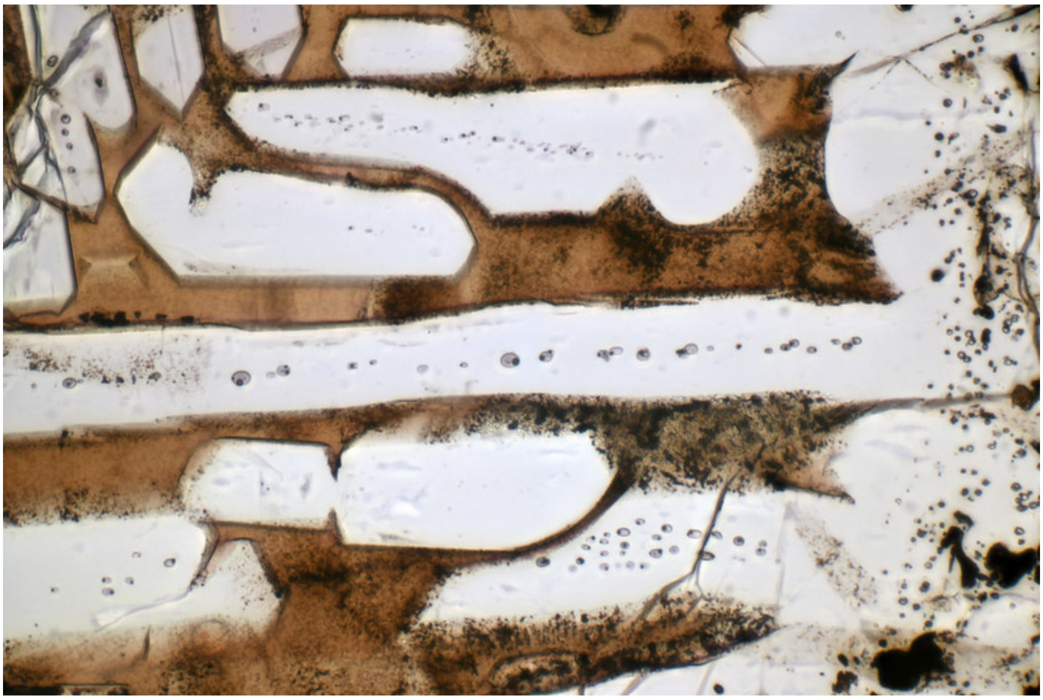

Figure 21: Higher magnification view of Figure 20.

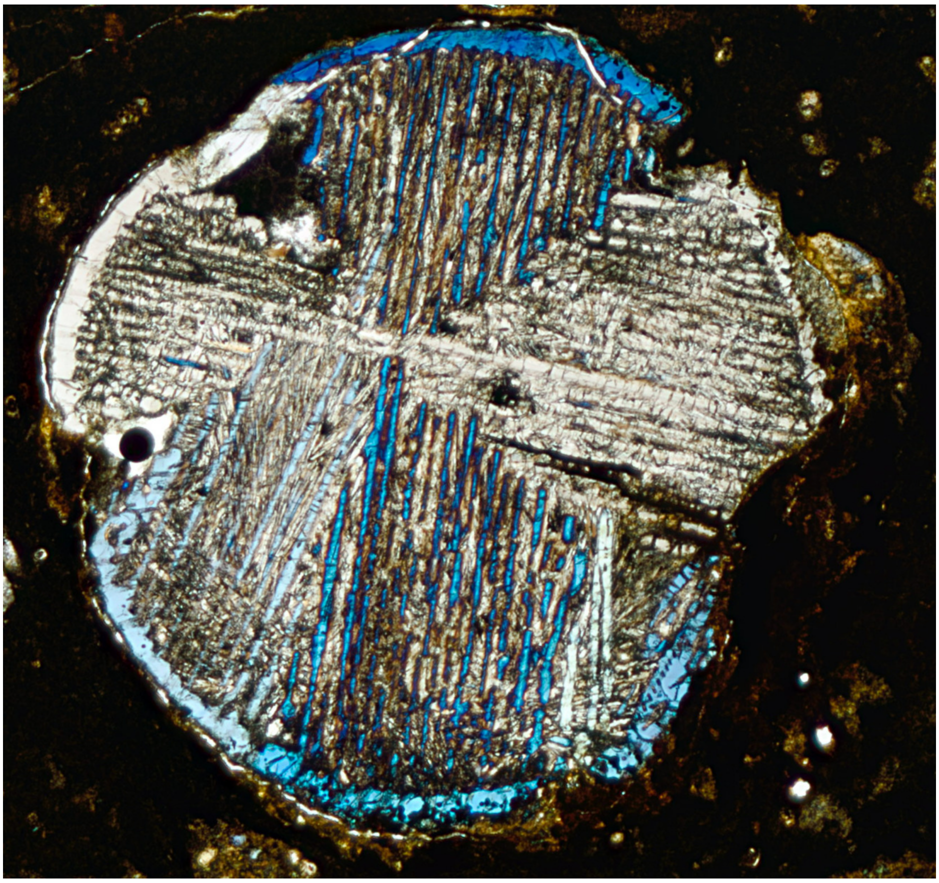

Figure 22: Fascinating inclusion with crossing. Northwest Africa 2224.

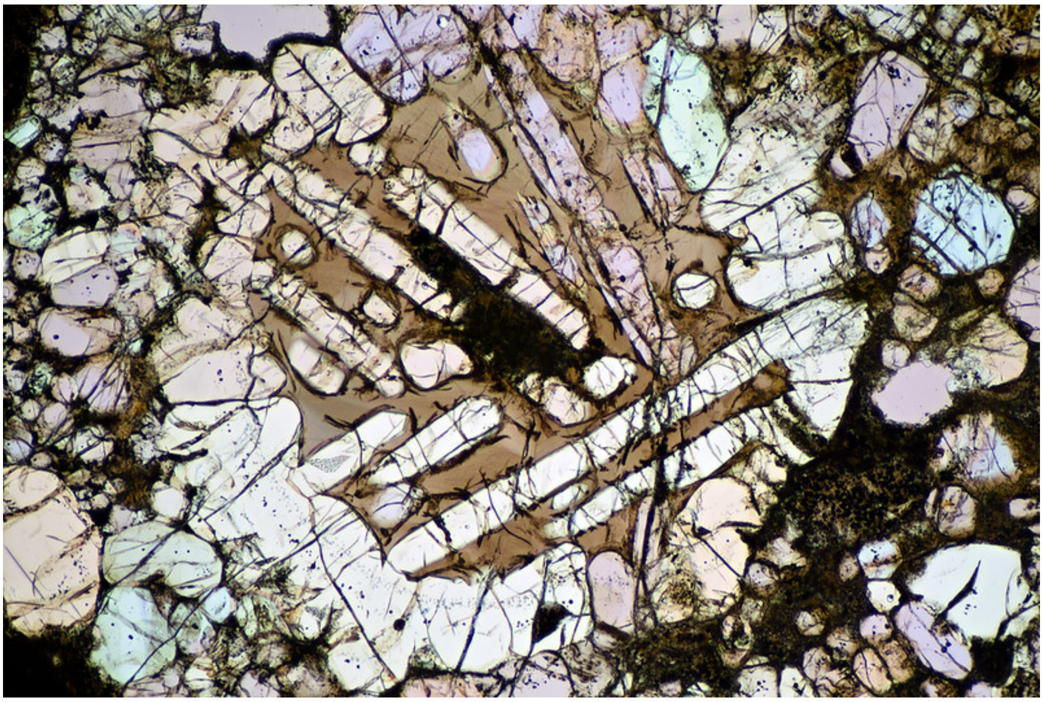

Figure 23: Characteristic pattern form. Northwest Africa 2224.

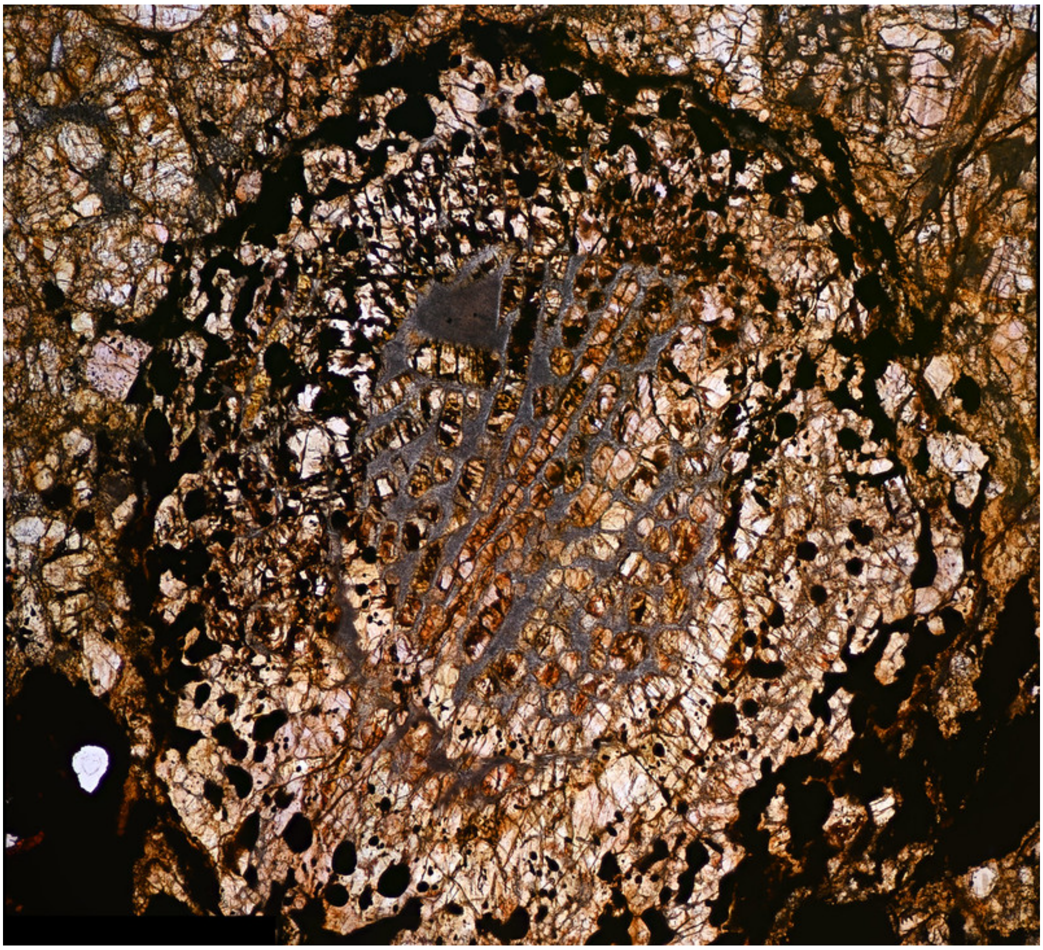

Figure 24: Characteristic pattern form. Northwest Africa 11344.

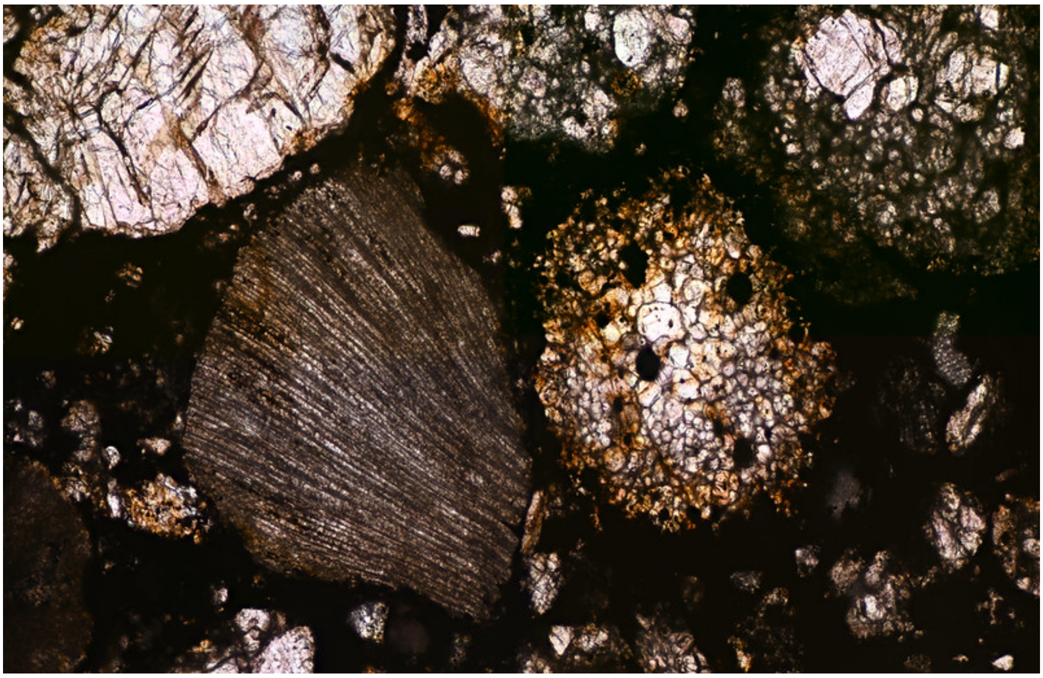

Figure 25: Arrangement of structures in Aba Panu similar to Figure 2 of Weinland's 1882 work.

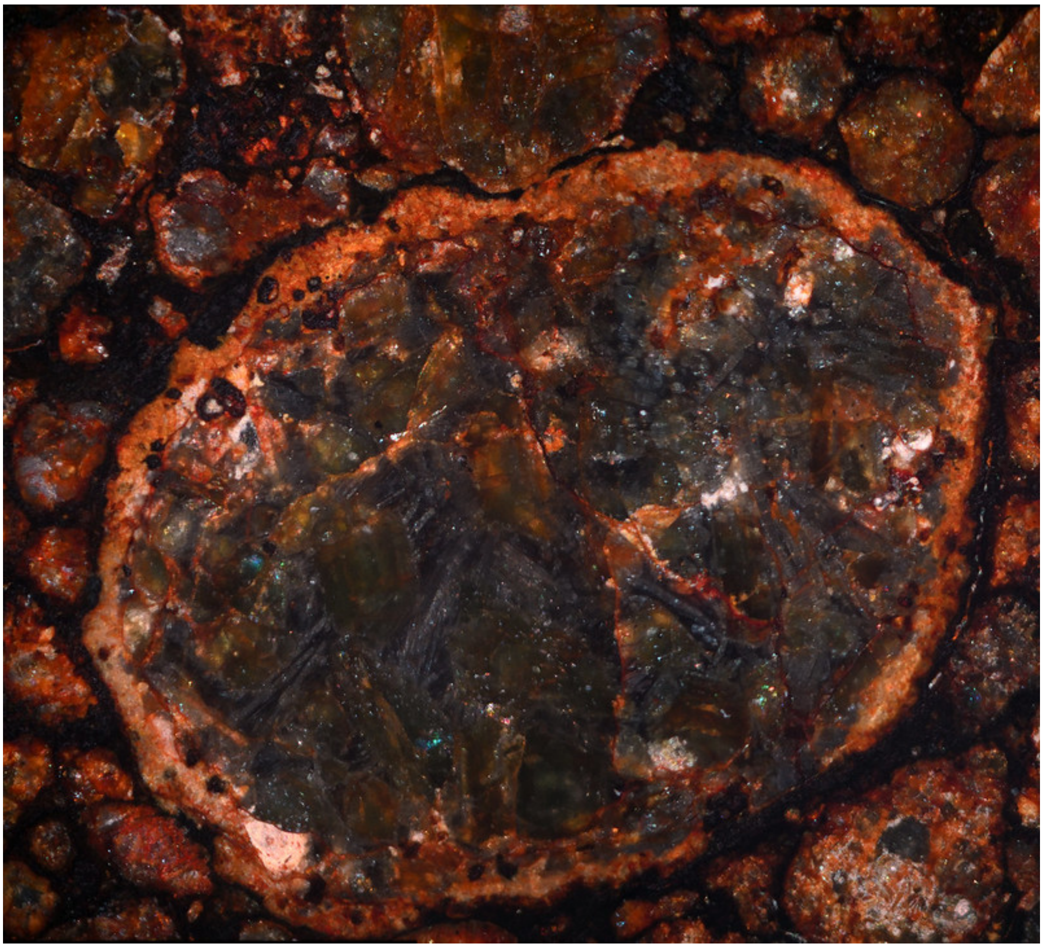

Figure 26: Surface photo showing inclusion with peculiar characteristics. Northwest Africa 6472.

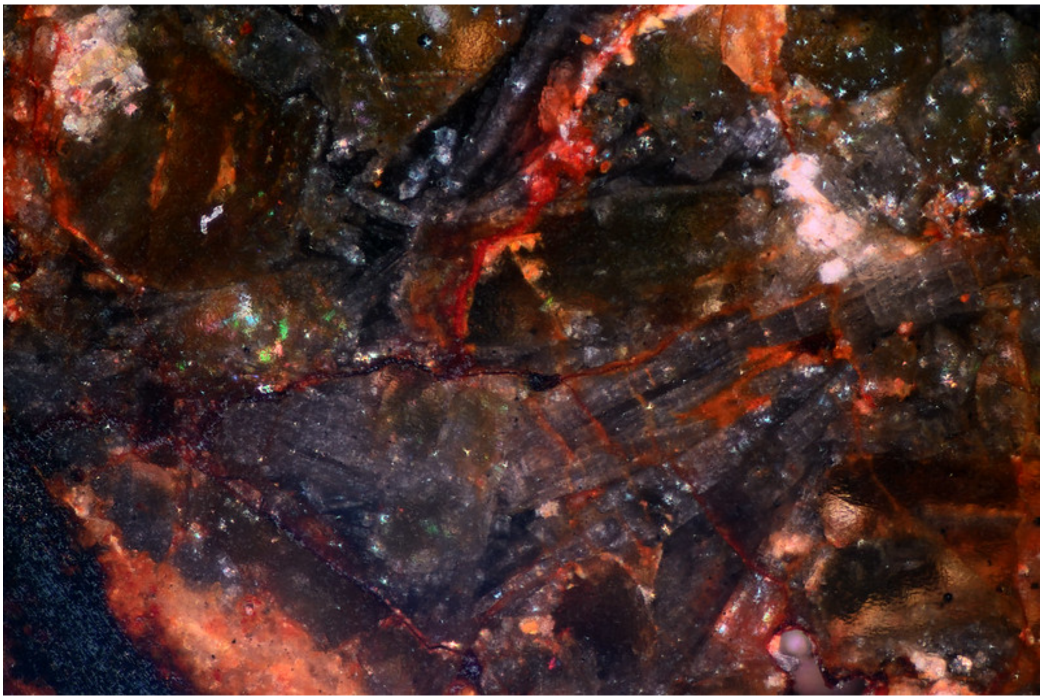

Figure 27: Higher magnification view of Figure 26.

Figure 28: Surface photo showing pacman type characteristics. Northwest Africa 6472.

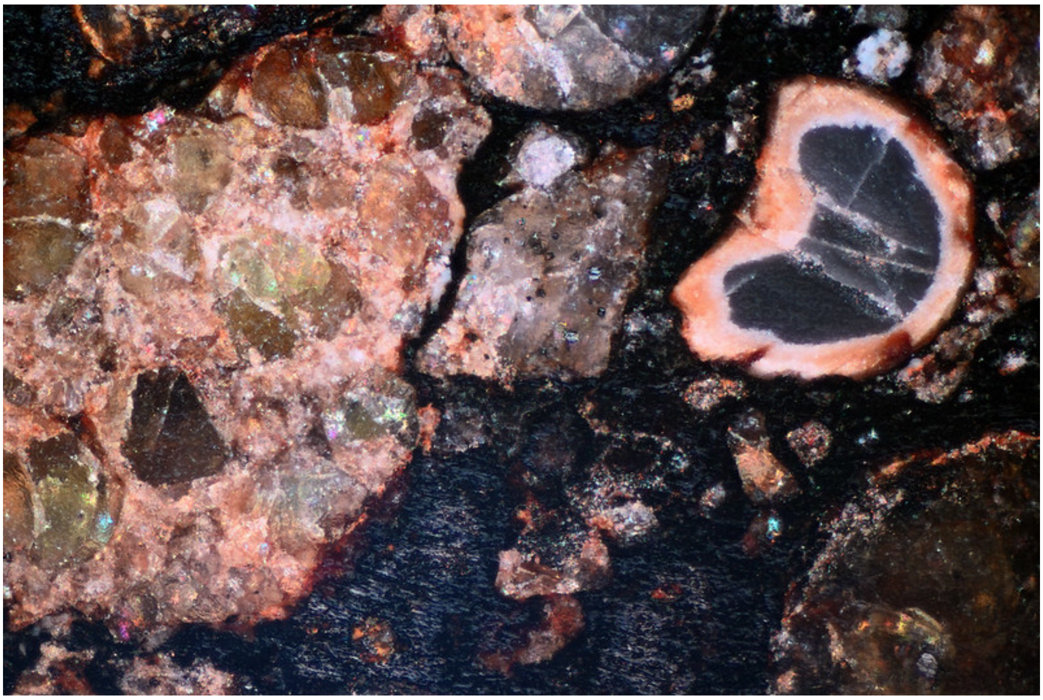

Figure 29: Surface photo showing inclusion with bilaterally symmetric shape. Northwest Africa 6472.

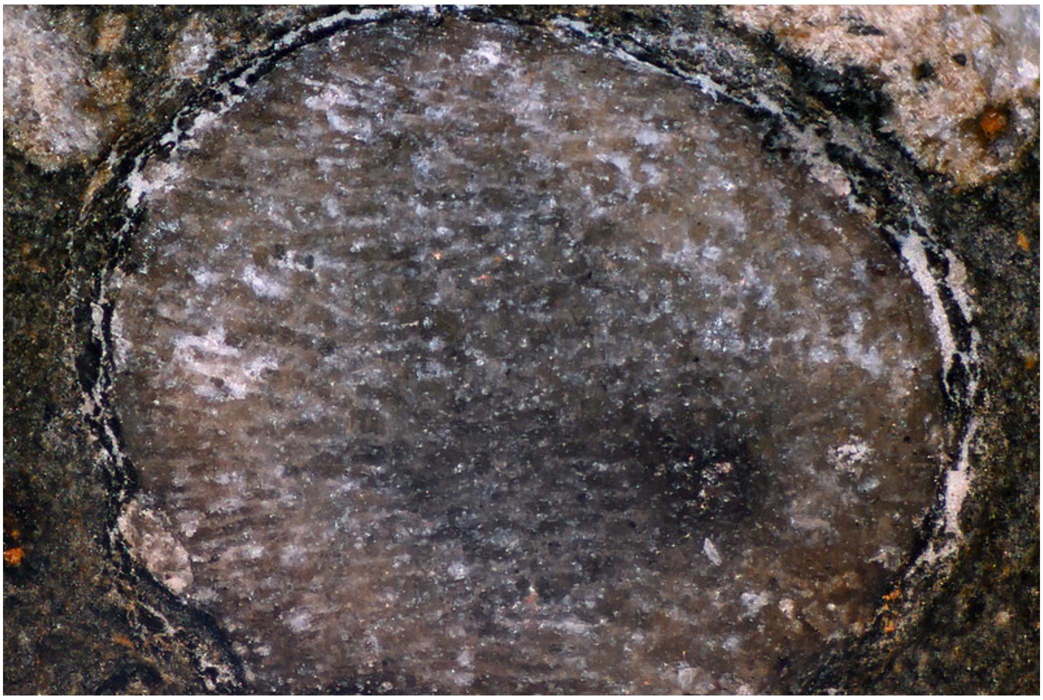

Figure 30: Surface photo showing peculiar characteristics. Northwest Africa 2224.

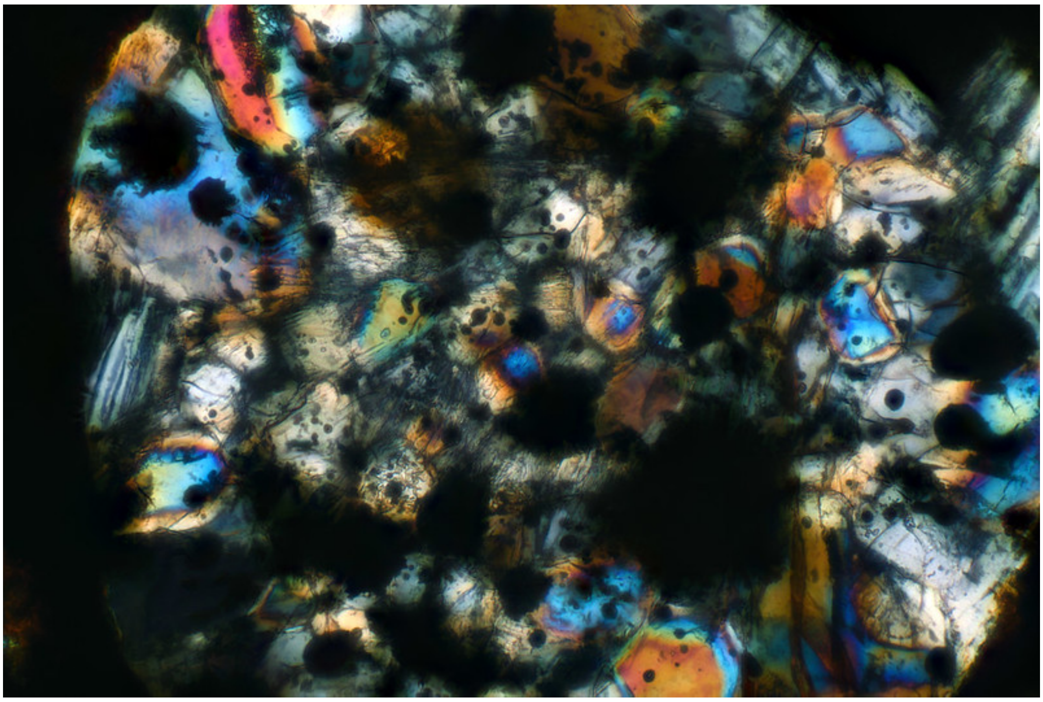

Figure 31: High magnification view of a carbonaceous inclusion. Kainsaz.

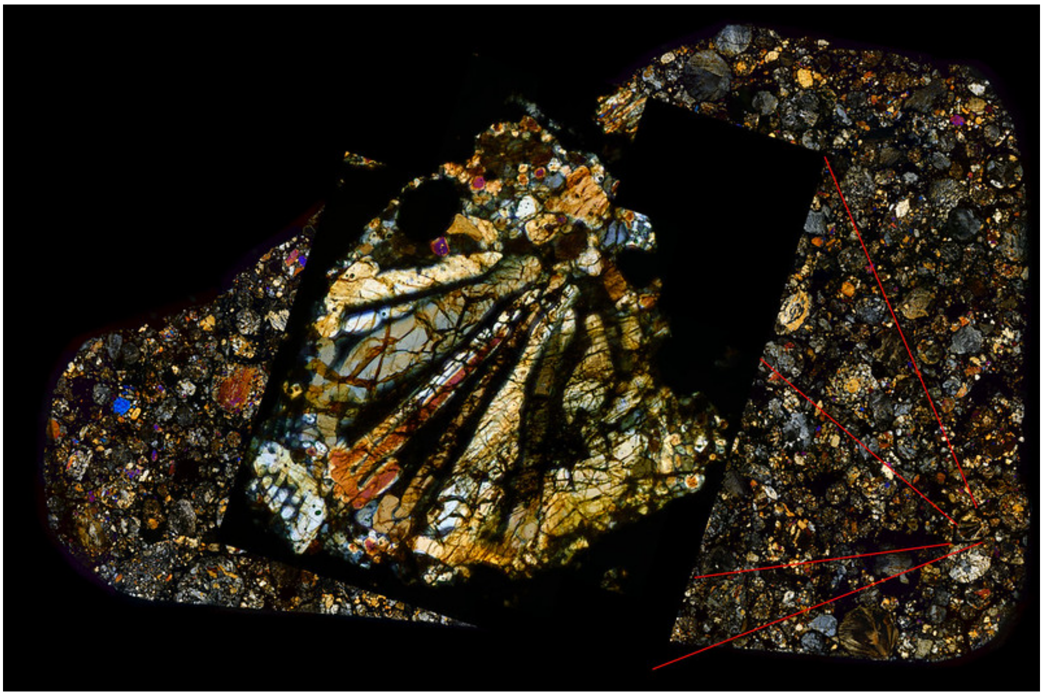

Figure 32: Triangular shaped inclusion with grated mouth hole resembling sea urchin larva structure. Northwest Africa 4910.

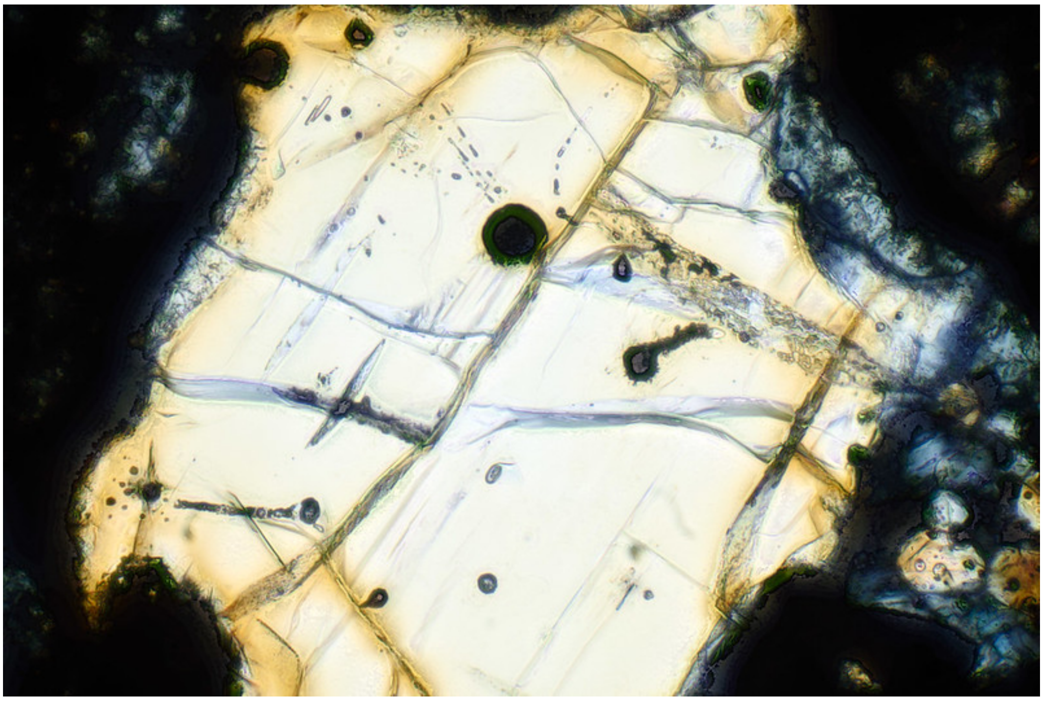

Figure 33: High magnification view of a carbonaceous inclusion containing interesting diatom-like patterns. Moss.

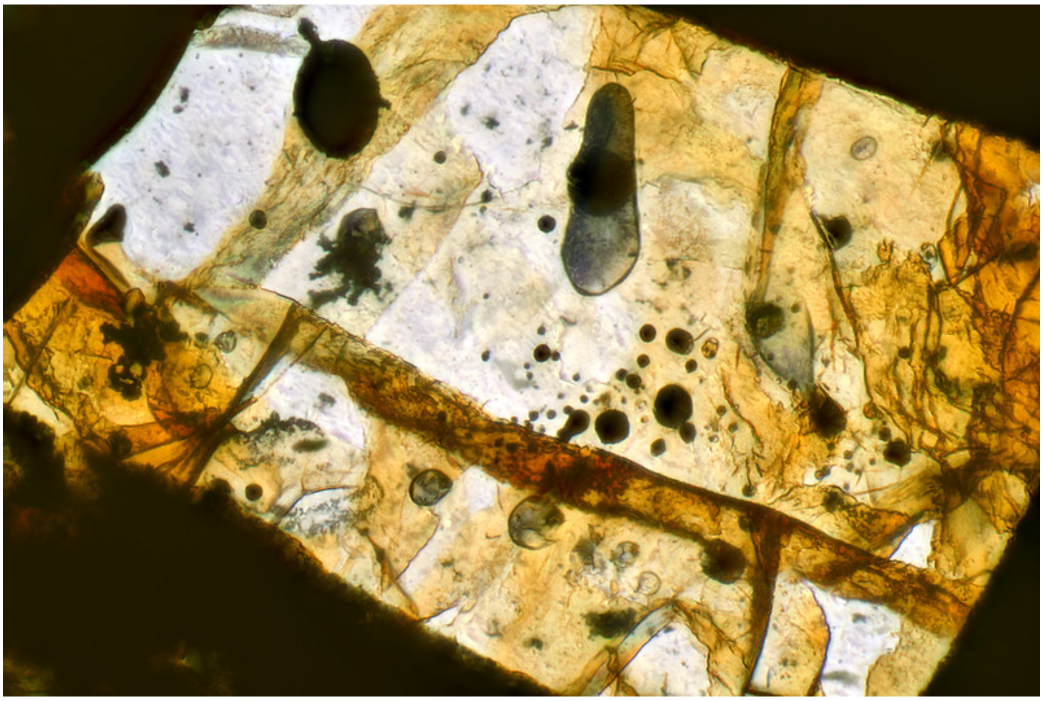

Figure 34: High magnification view of a carbonaceous inclusion containing interesting patterns. Kainsaz.

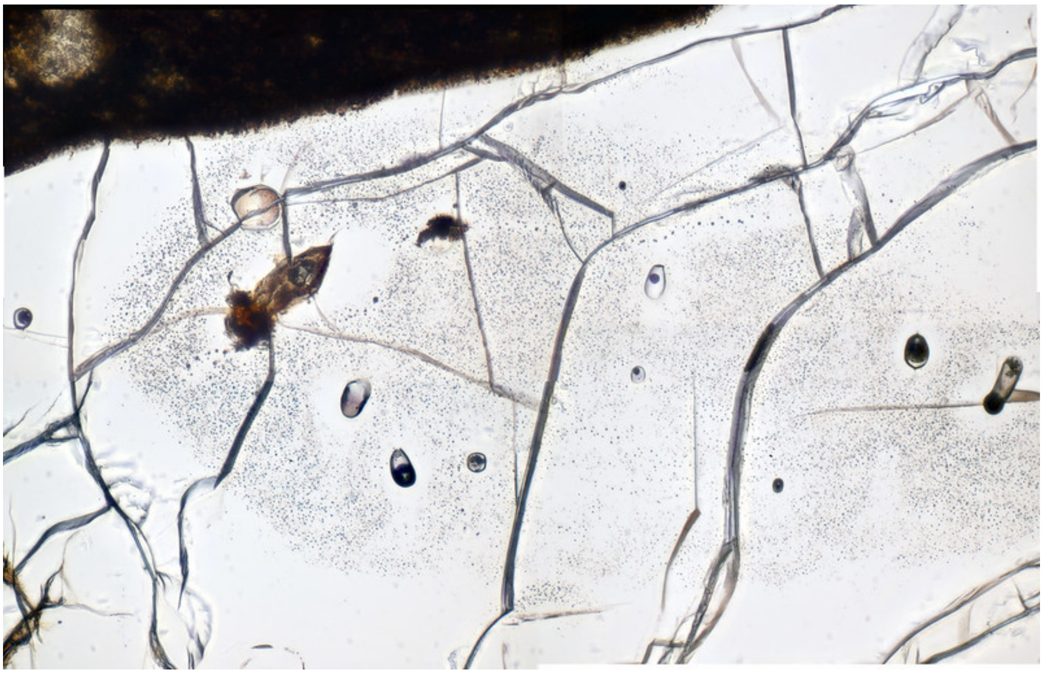

Figure 35: A unicum, this inclusion contained forms and structures that were characteristically different than most. Northwest Africa 2224.